UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,079	05/03/2007	Koji Demachi	091610	9179

38834   7590   02/17/2011
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER
CRUTCHFIELD, CHRISTOPHER M

ART UNIT	PAPER NUMBER
2466	

NOTIFICATION DATE	DELIVERY MODE
02/17/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 December 2010</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>8,13-18,20-22,24-27 and 34-36</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>24, 25 and 34</u> is/are allowed.

6)☒ Claim(s) <u>8,13-18,20-22,26,27,35 and 36</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Claim Objections

1.   **Claim 21** objected to because of the following informalities: it depends from claim 13,

which does not deal with encryption of transmissions, it appears the claim should depend from

claim 20. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 8, 13-18, 20-22, 26, 27 and 35 are rejected under 35 U.S.C. 101 because, under

the broadest reasonable interpretation, they are directed to software per se, which is not a

process, machine manufacture or composition of matter and therefore does not constitute

statutory subject matter.

In order to qualify as statutory subject matter, claimed subject matter must fall within one

of the four statutory categories of 35 USC 101. In re Nuijten, 500 F3d 1346, 1354 84 USPQ2d

1495, 1500 (2007) ("Claimed subject matter must be within at least one of four categories

enumerated in 35 U.S.C. §101 in order to be patentable, but once that requirement is satisfied,

court need not be overly concerned about which of those categories claimed subject matter falls

into; however, four categories in Section 101 together describe exclusive reach of patentable

subject matter, and if claim covers material not found in any of those four categories, then claim

falls outside plainly expressed scope of Section 101 even if subject matter is otherwise new and useful."). Software per se it is not a process, manufacture or composition of matter. Furthermore, since it lacks any physical manifestation it cannot comprise a machine. See *Id at 1354.* See also Ex Parte *Cherian*, Appeal No. 2008-004157, BPAI, (Non-Precedential) (2009); Ex Parte Magid, Appeal No. 2008-003824, BPAI, (Non-Precedential) (2009).

Since the "communications control system" of claims 8, 13-18, 20-22, 26, 27 and 35 are embodied using a series of "sections" "configured to perform" specific functions, they may comprise pure software. That is, although some of the functions to be performed are such that they would require physical hardware to carry out, (For example, sending a path diagnosis packet) the system does not recite the actual use of the corresponding hardware, but merely recites that the system is configured to perform the function. Therefore, the system could comprise software that is configured to perform the respective functions on corresponding hardware when it is executed. Therefore, under the broadest reasonable interpretation the "communications control system" of claims 8, 13-18, 20-22 and 35 comprises software per se.

Finally, it is noted that the action has been made final, as the presented 101 rejection was not present in the previously objected/allowed claims, which stated that the particular sections actually carried out the corresponding functions as opposed to being "configured to" perform them and is therefore necessitated by amendment.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

5.   This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6.   **Claims 35 and 36** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Chin*,

et al. (US Patent No. 6,163,543) in view of The IEEE 802.3ad Standard (Author Unknown, IEEE

802.3ad Standard-2000, IEEE Press, March 2000, Pages 1-183), *Xu*, et al. (US Pre Grant

Publication No. 2005/0002365), *Cristensen*, et al. (M. Christensen and F. Solensky,

Considerations for IGMP and MLD Snooping Switches, Pages 1-25, October 2003) and *Chen,*

et al. (J. Chen Z. Wang, Y. Sun, Real Time Capability Analysis for Switch Industrial Ethernet

Traffic Priority-Based, Pages 525-529, 2002).

Regarding claims 35 and 36, *Chin* discloses a communication control system for controlling communications performed between a plurality of communication stations that are connected to communication paths being duplicated with a main path and a sub-path, the communication control system comprising and a communication control method for controlling communications performed between a plurality of communication stations that are connected to communication paths being duplicated with a main path and a sub-path, the communication control method comprising the steps of:

a. A first communication function implementing sections which are duplicated so as to correspond with the main path and the sub-path respectively, and each of which is configured to implement a communication function in a physical layer of an OSI hierarchical model (Fig. 2, Element 224 and Column 3, Lines 40-51). (The system of *Chen* discloses the use of a link aggregation protocol for aggregating links from one or more servers [i.e. Communication Stations][Fig. 2, Element 228]. Each communication station has two physical links [i.e. first communication function implementing sections] to the adjacent switch via separate physical network interfaces [Fig. 2, Element 224 and Column 3, Lines 40-51]. The system operates by aggregating data to be transmitted at the data link layer by assigning a common data link layer [i.e. MAC] address to both of the physical links and transmitting data to the peer device using the assigned MAC address [Column 16, Lines 15-34 and Column 17, Line 47 to Column 18, Line 4]. The system may further implement sorting to separate packets to be transmitted into two prioritized groups [forming the high and low priority communication sections] [Column 17, Lines 16-36] and may then transmit the priority data over a first connection [i.e. the main path] until the main path fails, in which case both the high and low priority data are

transmitted over the second connection [i.e. the sub path] when the link collapses to using one path for both transmission [Column 11, Line 55 to Column 12, Line 2 and Column 17, Line 58 to Column 18, Line 4].)

b. A second communication function implementing section which is configured to implement a communication function in a data link layer of the OSI hierarchical model (Column 16, Lines 15-34 and Column 17, Line 47 to Column 18, Line 4 - See (a), Supra).

c. A high-priority communication section configured to perform a high-priority communication via the communication function implementing section and any one of the duplicated communication paths (Column 17, Lines 16-36 - See (a), Supra).

d. A low-priority communication section configured to perform a low-priority communication via the communication function implementing section and the sub-path, the low-priority communication section being configured to transfer second data (Column 17, Lines 16-36 - See (a), Supra).

e. Wherein the high-priority communication section and the low-priority communication section coexist in a single communication station, wherein the high-priority communication section is configured to perform the high-priority communication via the main path in a normal state, wherein the high-priority communication section is configured to perform the high-priority communication via the sub-path in abnormal state while the low-priority communication is restricted (Column 17, Lines 16-36). (The system

of *Chin* discloses a link aggregation system that allows a server to aggregate together

outgoing links [Column 6, Lines 52-65]. *Chin* further discloses that the server may

prioritize the outgoing data and may assign priority data to one of the paths and non-

priority data to another of the sub-paths [Column 17, Lines 16-36]. Finally, *Chin*

discloses that the two paths will collapse into a single path carrying both the priority and

the non-priority data when the path heartbeat detects the priority path has failed, with the

system giving preference to the priority data transmission [Column 11, Line 55 to

Column 12, Line 2 and Column 17, Line 58 to Column 18, Line 4].)

f. Wherein the communication function implementing section includes an address storing

section configured to store MAC addresses and a transmitting section configured to

attach the corresponding MAC address to a communication frame (Column 16, Lines 15-

34 and Column 17, Line 47 to Column 18, Line 4). (The system of *Chen* discloses that

the link aggregation port is assigned a single multicast address which is stored by the

data link layer protocol and is appended to all transmissions from the aggregated port

[Column 16, Lines 15-34 and Column 17, Line 47 to Column 18, Line 4]).

Chin fails to disclose the use of two separate second communication implementing

sections each connected with an associated first/physical layer communication function, such

that the system further comprises second communication function implementing sections which

are duplicated so as to correspond with the duplicated first communication function

implementing sections respectively, and each of which is configured to implement a

communication function in a data link layer of the OSI hierarchical model, a high-priority

communication section configured to perform a high-priority communication via the first

communication function implementing section and the second communication function

implementing section each corresponding to any one of the duplicated communication paths

and a a low-priority communication section configured to perform a low-priority communication

via the first communication function implementing section and the second communication

function implementing section each corresponding to the sub-path, the low- priority

communication section being configured to transfer second data. In the same field of endeavor,

The IEEE 802.3ad Standard discloses the use of two separate second communication

implementing sections each connected with an associated first/physical layer communication

function, such that the system further comprises second communication function implementing

sections which are duplicated so as to correspond with the duplicated first communication

function implementing sections respectively, and each of which is configured to implement a

communication function in a data link layer of the OSI hierarchical model, a high-priority

communication section configured to perform a high-priority communication via the first

communication function implementing section and the second communication function

implementing section each corresponding to any one of the duplicated communication paths

and a low-priority communication section configured to perform a low-priority communication via

the first communication function implementing section and the second communication function

implementing section each corresponding to the sub-path, the low- priority communication

section being configured to transfer second data (Page 97, Figure 43-2). (The system of The

IEEE 802.3ad Standard discloses that a separate data link/MAC layer is present on each of the

aggregated interfaces and is associated with a corresponding Physical Layer Interface [Page

97, Figure 43-2 - Everything below the "802.3 MAC Service Interface").

Therefore, since The IEEE 802.3ad Standard suggests the use of separate data link

layer interfaces for each physical layer interface, it would have been obvious to a person of

ordinary skill in the art at the time of the invention to combine the separate data link layers of

The IEEE 802.3ad Standard with the system of *Chin* by implementing two second

communication functions, one for each physical layer device, as taught by The IEEE 802.3ad

Standard and then linking the high and low priority communication section with each, as taught

by *Chin*. The motive to combine is to allow for full data link layer redundancy be providing two

data link layer communication functions.

      Chin fails to disclose the second communication function implementing section includes

an address storing section configured to store MAC addresses corresponding to the high-priority

communication section and the low-priority communication section respectively, a transmitting

section configured to attach the corresponding MAC address to a communication frame

depending on whether a transmission requestor is the high-priority communication section or

the low-priority communication section, and configured to transmits the communication frame to

the communication path. In the same field of endeavor, *Xu* discloses the second communication

function implementing section includes an address storing section configured to store MAC

addresses corresponding to the high- priority communication section and the low-priority

communication section respectively, a transmitting section configured to attach the

corresponding MAC address to a communication frame depending on whether a transmission

requestor is the high-priority communication section or the low-priority communication section,

and configured to transmits the communication frame to the communication path.

      Therefore, since *Xu* suggests transmitting video data using a multicast and storing and

attaching separate MAC addresses for multicast and unicast data, and *Chin* suggests

transmitting audio and video data at higher priority, it would have been obvious to a person of

ordinary skill in the art at the time of the invention to combine the MAC based video multicasting

of *Xu* with the prioritized audio and video of *Chin* by transmitting the audio and video using a

multicast address, as taught by *Xu*, via the high priority communication section of *Chin*, and

recalling and attaching the appropriate multicast or unicast MAC address for the communication

type, as taught by *Xu*. The motive to combine is to use link layer multicasting to transmit priority

audio and video.

Chin fails to disclose a receiving section configured to compare a destination MAC

address of the communication frame received from the first communication function

implementing section with the MAC address stored in the address storing section, and when a

match is found in the comparison result, configured to send the received communication frame

to the corresponding communication section. In the same field of endeavor, *Cristensen*

discloses a receiving section configured to compare a destination MAC address of the

communication frame received from the first communication function implementing section with

the MAC address stored in the address storing section, and when a match is found in the

comparison result, configured to send the received communication frame to the corresponding

communication section.

Therefore, since *Cristensen* discloses the separation of multicast traffic using a multicast

destination MAC address that is distinct from a unicast destination address, it would have been

obvious to a person of ordinary skill in the art at the time of the invention to use the multicast

separation of *Cristensen* to separate out the high priority data of *Chin*, such as multimedia audio

and video tagged with a destination multicast MAC address by using the destination multicast

address to sort the multicast/high priority and unicast/low priority data at the receiving node. The

motive to combine is to allow for the separation of multicast high priority data from low priority

data.

Chin fails to disclose the high-priority communication section being configured to transfer

first data in accordance with a protocol dedicated to process control and the low priority

communication section being configured to transfer the second data in accordance with an open standard protocol, wherein the first data is more real time than the second data. In the same field of endeavor, *Chen* discloses the high-priority communication section being configured to transfer first data in accordance with a protocol dedicated to process control and the low priority communication section being configured to transfer the second data in accordance with an open standard protocol, wherein the first data is more real time than the second data (Pages 526-528, Sections II to IV). (The system of *Chen* discloses that high priority is used for process control traffic and that other traffic is transported using lower priority [Page 527, Section IV).

Therefore, since *Chen* suggests the use of high priority for transporting process control traffic and lower priorities for other traffic and *Robertson* as modified by *Chin* suggests that the other traffic may comprise traffic according to one of several "open" standards, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine the high priority process control traffic of *Chen* by assigning high priority to control traffic and low priority to all other traffic. The motive to combine is to allow rapid transmission of critical process control data.

Allowable Subject Matter

7.   **Claims 24-25 and 34** are allowed.

6.   **Claims 8, 13-18, 20-22, 26 and 27** would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 101, set forth in this Office action.

8.   The following is a statement of reasons for the indication of allowable subject matter

With regard to independent claim 8 and dependent claims 26 and 27 the prior art fails to disclose the use of a fixed cycle diagnosing section that utilizes separate multicast addresses for diagnosing a main and subpath between a station and which then transmits the results of a diagnosis and information contained in the received diagnostic packets of other stations in its own diagnostic packets where the main and sub-paths are used for respective high and low priority communications. For example, the closest prior art, *Robertson*, et al. only discloses the use of multicasting heartbeats two redundant paths, it does not disclose the use of separate multicast addresses on each of the paths, the use of high or low priority communication paths or the forwarding on of information received from other participating stations in the multicast heartbeats (See The Non-Final Rejection date 3 September 2010).

With regard to independent claim 13 and dependent claims 14, 21, 26 and 27 the prior art fails to disclose the use of a fixed cycle diagnosing section that utilizes separate IP multicast addresses for diagnosing a high priority main path connected via a high priority communications section and low priority subpath connected via a low priority communications section and in which all stations share the same IP multicast addresses for transmitting on the main and sub-paths and in which each station contains an active and a backup unit each containing a separate high priority and low priority section and diagnosing section, and which switches between the active and backup units when a communication fails via the active unit. For example, the closest prior art, *Chin* only discloses the use of a first and second paths used for high and low priority transmissions and fails to disclose the use of an active and backup unit in conjunction with two separate sets high and low priority paths. *Chin* also fails to disclose the use of multicast for detecting failed paths or the assignment of separate addresses to the active and backup units (See, for example, the rejection of claim 35, supra).

With regard to independent claim 15 and dependent claims 16, 26 and 27, the prior art fails to disclose the use of a fixed cycle diagnosing section that utilizes separate multicast addresses for diagnosing a main and subpath between a station and which then transmits the results of a failed path diagnosis of the main path to other stations on the main path or the use of the main and subpath for high and low priority transmissions. For example, the closest prior art, *Robertson*, et al. only discloses the use of multicasting heartbeats two redundant paths, it does not disclose the use of separate multicast addresses on each of the paths, the use of high or low priority communication paths or the multicasting of fault information of the main path on the failed main path (See, for example, the rejection of claim 35, supra).

With regard to independent claim 17 and dependent claims 26 and 27 the prior art fails to disclose a system with a high and low priority communications sections each storing a MAC address associated with the high and low priority communications section and attaching the MAC address to outgoing transmissions where the high priority communications section may be connected to a main path or a sub path and wherein the system holds a multicast address storing section that stores a plurality of MAC multicast addresses which it checks against incoming transmission to determine if the transmission is to be sent to the high priority or low priority communications section and which, when the main path is faulty, the low priority communications section controls its transmission rate to be smaller then a predetermined value.

With regard to independent claim 18 and dependent claims 26 and 27 the prior art fails to disclose a communications system with a high and low priority communications section and a path diagnosing section that uses different IP multicast addresses to diagnose a main and a subpath and which records the results of the cyclic diagnosis of the path state on the main and sub path from the communications station to each other communications station and which, base don the diagnosis result swithces the high priority communications to the sub-path and

suspends transmission of low priority information while high priority information is being

transmitted. For example, the closest prior art, *Robertson*, et al. only discloses the use of

multicasting heartbeats two redundant paths, it does not disclose the use of separate multicast

addresses on each of the paths, the use of high or low priority communication paths, the storing

and checking of the availability of the path between the transmitting station and multiple

receiving stations, or the pre-emption of low priority traffic after a failover on the main path (See,

for example, the rejection of claim 35, supra).

    With regard to independent claim 20 and dependent claims 22, 26 and 27 the priori art

fails to disclose the use of high and low priority paths with fixed cycle diagnosis and storage, as

discussed in claim 18, supra. The prior art also further fails to disclose the use of a public and

private key to authenticate the transmissions between the stations.

    With regard to independent claims 24 and dependent claims 25, 26 and 27 the prior art

fails to disclose the use and storage of separate addresses for identifying high priority

transmissions from other stations, as discussed with respect to claim 17, supra. It further fails to

disclose the use of a master station for storing and forwarding diagnostic information from other

communication stations not on the same sub-network.

    With regard to independent claim 34 and dependent claims 25, 26 and 27 the prior art

fails to disclose the use of a high and low priority path with a cyclic diagnostic section for

diagnosing the main and sub-paths, as discussed with respect to claim 8, supra. The prior art

further fails to disclose the use of a master station for storing and forwarding diagnostic

information from other communication stations not on the same sub-network.

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant

is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Christopher Crutchfield whose telephone number is (571) 270-3989. The

examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Daniel Ryman can be reached on (571) 272-3152. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private

PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you

would like assistance from a USPTO Customer Service Representative or access to the

automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Crutchfield/
Examiner, Art Unit 2466
2/9/2011

/Daniel J. Ryman/
Supervisory Patent Examiner, Art Unit 2466